Forklift Hydraulic Control Valves

Hydraulic Control Valves for Forklift - The function of directional control valves is to be able to route the fluid to the desired actuator. Generally, these control valves include a spool positioned within a housing made either of steel or cast iron. The spool slides to different places within the housing. Intersecting grooves and channels direct the fluid based on the spool's position.

The spool is centrally located, help in place by springs. In this particular position, the supply fluid could be blocked and returned to the tank. If the spool is slid to a side, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. If the spool is moved to the other direction, the return and supply paths are switched. When the spool is allowed to return to the neutral or center position, the actuator fluid paths become blocked, locking it into place.

The directional control is usually designed to be stackable. They normally have a valve per hydraulic cylinder and a fluid input which supplies all the valves in the stack.

Tolerances are maintained extremely tightly, so as to deal with the higher pressures and to avoid leaking. The spools would usually have a clearance in the housing no less than 25 Ã?â??Ã?Âµm or a thousandth of an inch. In order to avoid distorting the valve block and jamming the valve's extremely sensitive parts, the valve block would be mounted to the machine' frame with a 3-point pattern.

Mechanical levers, solenoids or a hydraulic pilot pressure might actuate or push the spool right or left. A seal enables a part of the spool to protrude outside the housing where it is accessible to the actuator.

The main valve block is normally a stack of off the shelf directional control valves chosen by flow performance and capacity. Various valves are designed to be on-off, whereas others are designed to be proportional, as in valve position to flow rate proportional. The control valve is amongst the most expensive and sensitive components of a hydraulic circuit.